Upper Bridge
River Street, spanning the AuSable River
Keeseville
Essex County (Charton County)
New York

HAER No. NY-169

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PHOTOGRAPHS
WRITTEN HISTORICAL DATA
REDUCED COPIES OF MEASURED DRAWINGS

Historic American Engineering Record National Park Service Department of the Interior Washington, DC 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

HAER NY, 16-KEVI 2-

UPPER BRIDGE HAER NO. NY-169

Location:

River Street spanning the AuSable River on River Street connecting the Village of Keeseville, Town of Chesterfield, Essex County, and the Town of AuSable, Clinton County, New York. Bridge is 900 feet west of the intersection of Mill Hill Road and U. S. Route 9.

UTM: N 4928380 E 620390

New York State Quad: Keeseville

Date of

Construction: 1878.

Engineer/

Builder: Murray, Dougal and Company of Milton, Pennsylvania.

Present Owners: Essex and Clinton Counties.

Present Use: One lane vehicular bridge.

Significance: The Upper Bridge is one of three nineteenth century bridges

within the Village of Keeseville. A two-span, pin connected, high Pratt, iron truss bridge, it is one of the oldest wrought iron truss bridges in the Adirondack/Champlain Region. It was fabricated and erected by Murray, Dougal and

Company of Milton, Pennsylvania. Although primarily a

railroad car manufacturer, the company built bridges from the early 1870's to 1880. Today, bridges known to be built by Murray, Dougal and Company are extremely rare. This bridge is listed in the National Register of Historic Places and has

been designated an American Society of Civil Engineers National Civil Engineering Landmark along with two other

Keeseville bridges.

Project

Information:

The documentation of the Upper Bridge was prepared by the Historic American Engineering Record (HAER), National Park Service, during the Summer of 1987 for the New York State Historic Bridges Recording Project. This project was sponsored by the New York State Department of Transportation and under the supervision of Eric DeLony, Chief & Principal Architect, HAER. This report was written by Andrew Cole and Charles Scott. When citing this report, please credit the Historic American Engineering Record and the authors.

GEOGRAPHICAL SETTING

The Village of Keeseville is situated in the northeastern part of New York's Adirondack Park, about five miles west of Lake Champlain. The site for this community was specifically chosen to take advantage of the water power afforded by the falls and rapids on this particular stretch of the AuSable River. The AuSable River is formed by the confluence of its East and West Branches at the Village of AuSable Forks some fifteen miles to the southwest of Keeseville. These two rivers have their headwaters situated further into the park and are fed by the many tributaries that originate on the slopes of New York's highest mountains.

HISTORY OF RIVER CROSSINGS AT THE UPPER BRIDGE SITE

The first bridge crossing the AuSable River at the site of the present iron truss bridge was erected during the early 1840's. This first bridge had four queen post truss spans, each approximately 50 feet in length, carried on stone-filled timber crib piers. This bridge was washed away in a flood on September 30, 1856. The second structure erected at this site was a 215 foot timber Howe truss covered bridge which, when completed, was reputed to be the longest single-span bridge over the AuSable River. This bridge lasted for nineteen years until the "Winter of 1875," when, as local newspapers reported, a combination of heavy snows and strong winds caused it to collapse.

A NEW IRON BRIDGE FOR THE UPPER KEESEVILLE CROSSING

After two years had passed without a crossing at the upper bridge location, some of the residents of Keeseville showed open discouragement that a new bridge had not been erected after the collapse of the covered bridge. On March 14, 1877, over a year after the loss of the covered bridge, a columnist for the Keeseville section of the Plattsburgh Republican remarked cynically that "the time was when there were two [highway] bridges across the river [at Keeseville]." Seven months later on October 6, 1877, another article in the same newspaper commented that a bridge builder had been in the village proposing to erect a wrought iron bridge and that "it is to be hoped the [town] commissioners [of Chesterfield and AuSable] will not let this chance go by nor let any selfish interests stand in the way of the public good." It seems reasonable to assume that some type of controversy had kept a new bridge from being erected. By October 20, however, progress towards replacing the upper bridge had finally been made. Perhaps aroused or stung by the public criticism, the highway commissioners of the two towns bordering the AuSable River met, decided to rebuild the upper bridge, and announced that proposals for the bridge and pier should be sent to George C. Wilkinson, a highway commissioner for the Town of AuSable, on or before October 27 when a contract would be let.

William H. Law, an engineer and agent of Murray, Dougal and Company, delivered his company's proposal on October 26. The proposal read:

We propose to furnish all the materials and labor and erect, ready for travel, the super-structure of a wrought iron bridge, according to the following specifications: the specifications for the pier now in the hands of the commissioners, for the sum of three thousand, nine hundred and twenty dollars.

Location of bridge across the AuSable River between the towns of Keeseville and AuSable: Extreme length of super-structure, about 214 feet. Width of roadway (16) sixteen feet. No. of panels in each truss (8) eight. Height of truss from center of chord pins (16 ft.) sixteen feet.

The longitudinal stringers to be of white pine twelve inches deep by three inches thick and spaced about two feet apart on top of floor beams. The floor plank to be of hemlock, three inches thick and securely spiked to the stringers.

The wheel guards to be five inches square, of hemlock and bolted to the floor with half inch bolts.

The iron work to receive one coat of metallic paint before leaving the workshop and two coats after the bridge is erected.

All of the material is to be of the best quality and the whole superstructure completed in a good, substantial and workmanlike manner.

Murray, Dougal and Company of Milton, Pennsylvania, was awarded the contract for erecting the new Upper Bridge and promptly sent a team of their own workmen to Keeseville where, by early December of 1877, they were at work selecting the stones needed to build the center pier. These men probably supervised two local masons, A. and J. Dowling, who had been awarded the contract to construct the abutments and stone pier. By the beginning of January, 1878, water had been released from behind the dam just downstream from the bridge site so that the construction of the piers could begin. Erection of the bridge did not begin before June 8, 1878, when the local newspaper reported that the engineer representing Murray, Dougal and Company was expected to arrive in Keeseville to begin erection of the bridge.

Murray, Dougal and Company erected a bridge that was ornamental as well as practical. Although the bridge was designed as a simple Pratt truss bridge, it was adorned with iron finials and intricate cast iron lattice portal bracing, with elaborate builder's plates mounted at each portal. One of the most distinctive features of the bridge is the inclined end post cover plate. Instead of using a standard flat plate, the Murray, Dougal and Company engineer chose to install a cover plate with a single raised corrugation running longitudinally through the center. Other truss members, such as the upper lateral struts, are imprinted with "Phoenix, Phila.," and were probably supplied by the Phoenix Iron Company.

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The Upper Bridge is 218 feet in length, and sits atop a 30-foot high pier. The bridge has an out-to-out width of 16 feet, 2 inches, a center line of trusses width of 17 feet, 2 inches, and a curb-to-curb width of 15 feet, 4 inches. Each of the two 108-foot long spans has eight truss panels, with inclined end posts. Individual panels are 16 feet high and 13 feet, 5 inches wide. The depth of the tapered plate floor beams is 8.5 inches at the ends and 16.5 inches at the center. The original wooden stringers and deck have been replaced by steel stringers and an open grate steel deck. A low chain link fence is attached to the pipe handrails. The roadway through the bridge has a vertical clearance of 13 feet 9 inches at the centerline and 11 feet 6 inches at the edges of the portal bracing. The bridge has a rated load capacity of six The most recent survey of traffic using the bridge, conducted in 1983, counted a daily average of 1,980 vehicles. The bridge has begun to show serious signs of wear. According to a 1983 inspection report prepared by the New York State Department of Transportation, the top chord members are "overstressed" which has caused "rippling" in the top plates. Also, the pier footing displays some spalling at the waterline.

MURRAY, DOUGAL AND COMPANY

The firm of Murray, Dougal and Company of Milton, Pennsylvania was established in 1864 by Samuel W. Murray, William P. Dougal, Charles C. McCormick, and John McCleery for the purpose of building all types of railroad freight cars. Also known as the Milton Car Works, Murray, Dougal and Company was recognized as a leading producer of tank cars for the fledgling petroleum industry concentrated in western Pennsylvania. Samuel Murray was a pioneer in tank car building, having received the first United States patent for a railroad tank car in the 1860's.

Changes in management occurred in the middle of the 1870's. John McCleery, who was a lawyer and had served in the Union Army during the Civil War, withdrew from the company in 1875, for unknown reasons. In 1878, Charles McCormick left and a few months later so did William Dougal. Despite the changes in management, the name of the firm remained Murray, Dougal and Company.

During the 1870's Murray, Dougal and Company began fabricating and erecting iron bridges. It is not known exactly when or why the company began this type of work or how successful they were in competing for contracts. Bridge contract announcements in engineering periodicals during the late 1870's mention bridges being erected by Murray, Dougal and Company in Virginia, Pennsylvania, New York, and Connecticut. During the late 1870's when the company was both erecting bridges and building railroad cars, the Milton plant employed as many as 400 people, but no records delineate how many worked in the bridge shops and how many built railroad cars.

Today bridges erected by Murray, Dougal and Company are very rare in comparison to the more familiar names of the King Iron, Wrought Iron or Berlin Iron Bridge companies. One of the reasons for the paucity of surviving Murray, Dougal and Company bridges is because a fire destroyed the bridge shop, the car

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shop, and a large part of Milton, Pennsylvania on May 14, 1880 and the company did not rebuild the bridge shops. Again, no records survive to indicate why the company did not resume building bridges. Perhaps this line of business was smaller, less profitable, and more competitive than railroad car manufacturing. The Milton, Pennsylvania car works plant was rebuilt and the company continued to operate between 1880 and 1899 under the name Murray, Dougal, and Company, Limited. In March of the latter year, Murray, Dougal and Company was one of thirteen railroad car manufacturers joined together to form the American Car and Foundry Company. With headquarters in Earth City, Missouri, this company continues to operate the Milton plant for the production of railroad cars.

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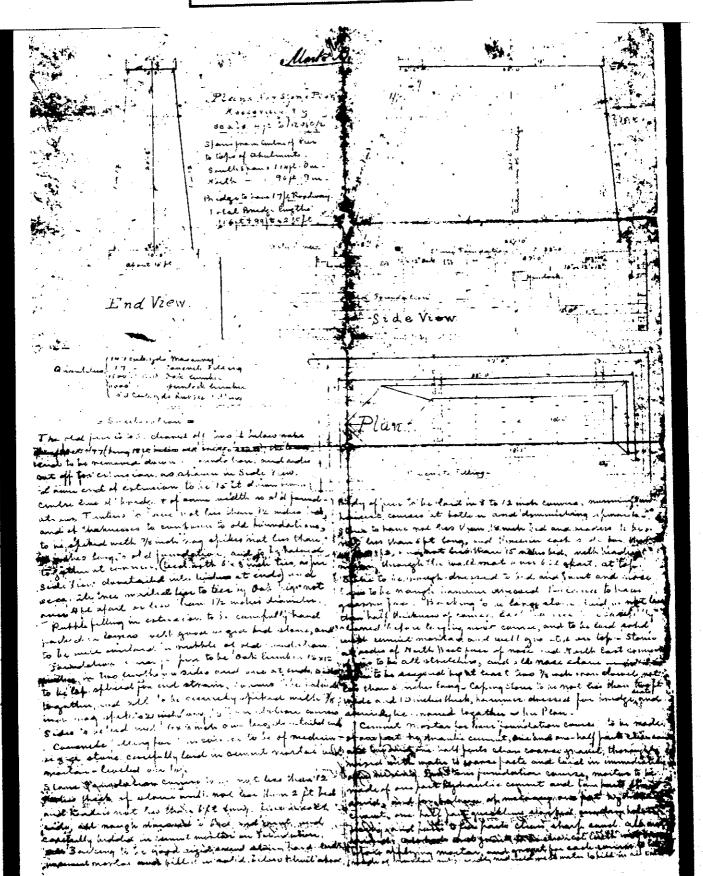
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APPENDIX

The following documents pertaining to the Upper Bridge were made available for photocopying by Mr. Arthur Cumber of Clintonville, New York. The documents were bound by a wrapper with "Upper Bridge Papers" written on one side.

| Plans and specifications for stone pier, undated. | Appendix | pp.1-2 |
|--|----------|--------|
| Proposal from M.C. McKenzie for pier work, Oct. 10, 1877. | 78 | p.3 |
| Proposal from Hughes Brothers for pier work, undated. | n | p.4 |
| Specifications and strain sheet, Oct. 26, 1877. | 11 | pp.5-6 |
| Signed contract, Oct. 29, 1877. | 11 | p.7 |
| Bill for payment, Sept. 25, 1878. | ıŧ | pp.8-9 |
| Letter accepting counter offer for payment, Oct. 11, 1878. | 11 | p.10 |
| Letter acknowledging payment in full, Oct. 18, 1878. | 11 | p.11 |
| Wrapper for "Upper Bridge Papers." | 19 | p.12 |

from the ARTHUR CUMBER HISTORICAL COLLECTION Clintonville, New York



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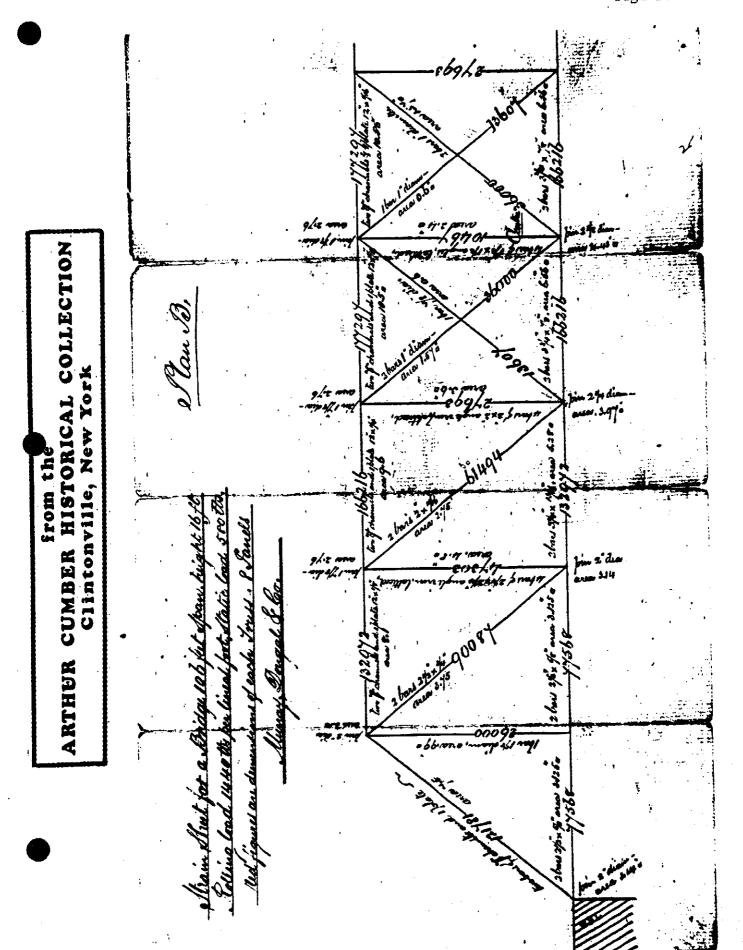
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